



The S1 and S2 observation tasks

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How it is supposed to be

- Normally:
 - Excursion to the Einsteinturm
- Observation with the 60cm diameter Tower telescope
- Spectroscopy with the 14-meter-long dual spectrograph

=> Allows to gather high-quality solar spectra



Fig. 1: The Einsteinturm in Potsdam

The Sad Reality

- Einsteinturm is closed for renovations 😞
- Luckily, we have a vast data archive
- Archival data will be analyzed
- Can be found on a12.astro.physik.uni-potsdam.de
 - Use the login credentials you've been sent
- Includes .fits files of the spectra and observational protocols



Fig. 2: Data from the can

S1: Rotation of the Sun

- As always: **Look at the instructions in the wiki!!!!**
- How can we know the speed of a distant object?
- I will give you a quick walkthrough of the reduction process now...
- What to think of for the analysis?
 - The Sun rotates differentially (With a different velocity at the poles compared to the equator)
 - The Sun's rotation axis is inclined as viewed from us (neglectable effect?)

S1: Analysis: Rotation of the Sun

- The Sun's equator is not aligned with the ecliptic
- The observed limbs are not perfectly at the equator!
- Look up ephemeris (Hel. Lat and PA angle):
<http://astropixels.com/ephemeris/ephemeris.html>
- Look up an appropriate formula to correct your velocity with respect to differential rotation (cite the source)! (Tip: Snodgrass & Ulrich (1990), eq.4)



Vid. 1: Surface rotation of the sun

S2: Measuring Solar magnetic fields

- Once more: **Look at the instructions in the wiki!!!!**
- How do we know the magnetic field on the surface of a distant object?
- I will give you a quick walkthrough of the reduction process now...
- What to think off for the analysis?
 - How did the Sun look on that day?
 - How can solar spots be classified (Waldmeier/Zurich scheme)?

Further Procedure

- Send an email to prakt@astro.physik.uni-potsdam.de to be told your folder for analysis
- The timer starts from when you receive the path to your folder from us
- 2 weeks until you have to hand in the report!
- If you are stuck or have questions, feel free to ask at prakt@astro.physik.uni-potsdam.de